



# MicroPower Direct



2W, High Isolation, SIP  
Regulated, Short Circuit Protected  
DC/DC Converters  
**D200RPI Series**

## Key Features

- Miniature SIP Package
- Short Circuit Protected
- 1.5 MH MTBF
- 2.0W Output Power
- High Isolation
- Low Cost

## Electrical Specifications

Specifications typical @ +25°C with nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

### Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	5 VDC Input	4.5	5.0	5.5	VDC
	12 VDC Input	10.8	12.0	13.2	
	24 VDC Input	21.6	24.0	26.4	
Input Filter	π (Pi) Filter				
Reverse Polarity Input Current				0.3	A

### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				±2.0	%
Line Regulation	For Vin Min to Max			±0.5	%
Load Regulation	I <sub>out</sub> = 10% to 100%			±0.5	%
Ripple & Noise (20 MHz)				75	mV P - P
Output Power Protection		120			%
Temperature Coefficient				±0.02	%/°C
Output Short Circuit	Continuous				

### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	3,000			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		60		pF
Switching Frequency			40		kHz

### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+71	°C
Operating Temperature Range	Case	-40		+85	°C
Storage Temperature Range		-40		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

### Physical

Case Size (5V & 12V Models)	1.26 x 0.32 x 0.55 Inches (32.0 x 8.0 x 14.0 mm)
Case Material	Non-Conductive Black Plastic
Weight (5V & 12V Input Models)	0.17 Oz (4.8g)

### Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	1.5			MHours

### Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	5 VDC Input	-0.7		9.0	VDC
	12 VDC Input	-0.7		18.0	
	24 VDC Input	-0.7		30.0	
Lead Temperature	1.5 mm From Case For 10 Sec			260	°C
Internal Power Dissipation	All Models			450	mW

**Caution:** Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

## Model Selection Guide

Model Number	Input				Output			Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load					
D201RPI	5	4.5 - 5.5	606	80	5.0	400.0	40.0	66	1,000
D202RPI	5	4.5 - 5.5	606	80	9.0	222.0	22.0	66	1,000
D203RPI	5	4.5 - 5.5	571	80	12.0	167.0	17.0	70	1,000
D204RPI	5	4.5 - 5.5	571	80	15.0	133.0	13.0	70	1,000
D205RPI	5	4.5 - 5.5	588	80	24.0	83.0	10.0	68	1,000
D211RPI	12	10.8 - 13.2	253	45	5.0	400.0	40.0	66	500
D212RPI	12	10.8 - 13.2	253	45	9.0	222.0	22.0	66	500
D213RPI	12	10.8 - 13.2	238	45	12.0	167.0	17.0	70	500
D214RPI	12	10.8 - 13.2	238	45	15.0	133.0	13.0	70	500
D215RPI	12	10.8 - 13.2	246	45	24.0	83.0	10.0	68	500
D221RPI	24	21.6 - 26.4	130	25	5.0	400.0	40.0	64	200
D222RPI	24	21.6 - 26.4	130	25	9.0	222.0	22.0	64	200
D223RPI	24	21.6 - 26.4	122	25	12.0	167.0	17.0	68	200
D224RPI	24	21.6 - 26.4	122	25	15.0	133.0	13.0	68	200
D225RPI	24	21.6 - 26.4	118	25	24.0	83.0	10.0	70	200

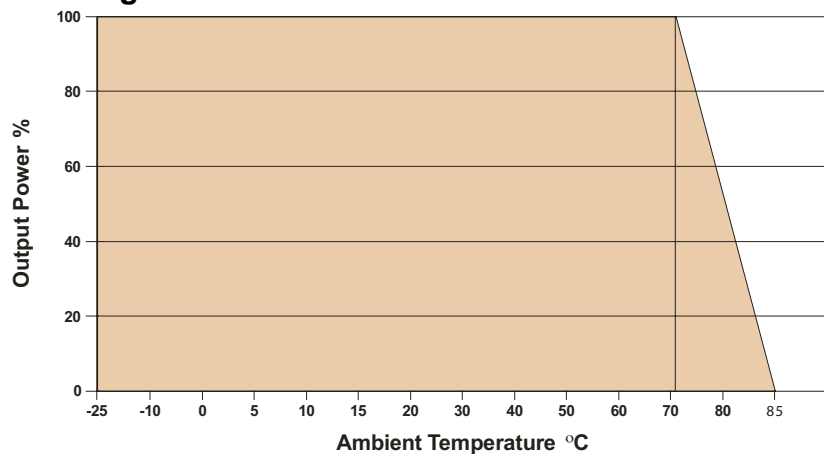
### Notes:

- These units do not require external components to operate, but the use of an input capacitor (10  $\mu$ F) may enhance performance in some applications. An output capacitor (4.7  $\mu$ F to 10  $\mu$ F) may be used to reduce ripple.

### Capacitive Load

$\mu$ F Max
470

### Derating Curve

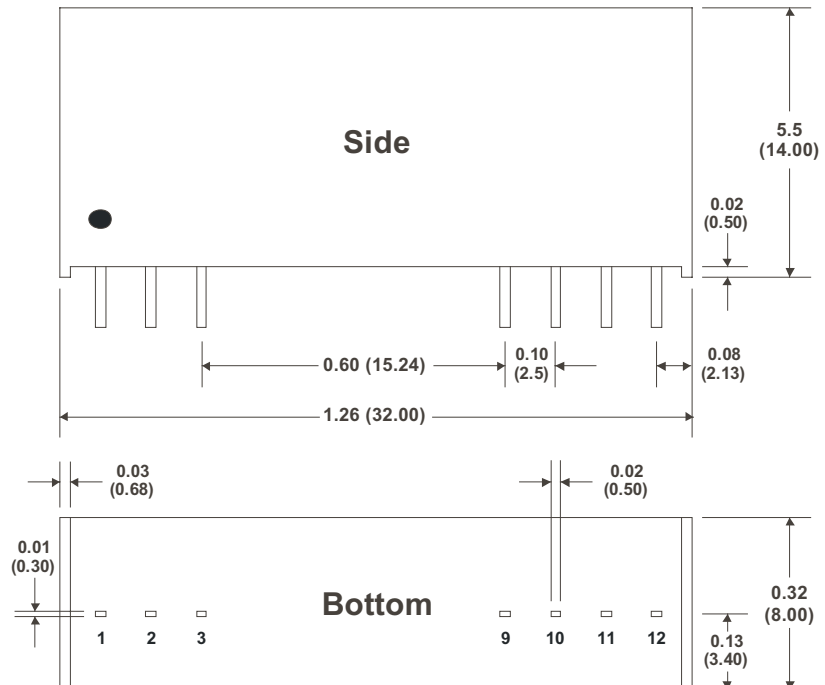


### Pin Connections

Pin	Function
1	+Vin
2	-Vin
3	NC
9	NC
10	-Vout
11	+Vout
12	NC

NC: No Connection

### Mechanical Dimensions



**Notes:** All dimensions are typical in inches (mm)  
Tolerance x.xx =  $\pm 0.01$  ( $\pm 0.25$ )  
Pin 1 is marked by a "dot" or indentation on the side of the unit



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